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ABSTRACT

A 1978 field test evaluated the 3-program "Collecting Information" cluster of ThinkAbout, a series of 60 15-minute instructional television programs for fifth and sixth graders designed to strengthen reasoning skills and to review and reinforce language arts, mathematics, and study skills. Conducted in 60 classrooms in Kansas City, Missouri, Syracuse, New York, and Knoxville, Tennessee, the study focused on the use of the cluster and its impact on teachers, students, and the classroom process. Teacher orientation, student testing condition, and grade level were used as variables, and data collection methods included classroom observation, written questionnaires and interviews to assess student outcomes, and written questionnaires to obtain teacher reactions. It was concluded that classroom utilization of the cluster met the project's expectation for use, i.e., teachers and students discussed appropriate topics related to the cluster and engaged in relevant activities, and use of the cluster has a focusing and organizing effect on student cognitive structure relating to specific techniques for collecting information. (Author/LMM)

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A SUMMARY OF THE "THINKABOUT" CLUSTER EVALUATION: COLLECTING INFORMATION

AGENCY FOR INSTRUCTIONAL TELEVISION
BOX A
BLOOMINGTON, INDIANA 47402

APRIL 1979

IR011391

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The Agency for Instructional Television is a nonprofit American-Canadian organization established in 1973 to strengthen education through television and other techniques. AIT develops joint program projects involving state and provincial agencies, and acquires and distributes a wide variety of television and related printed materials for use as major learning resources. It makes many of the television materials available in audiovisual formats. AIT's predecessor organization, National Instructional Television was founded in 1962. The AIT main offices are in Bloomington, Indiana; there are regional offices in Washington, D.C., Atlanta, and the San Francisco areas.

ThinkAbout is being developed and financed by a consortium of thirty-seven state and provincial educational agencies under the management of the Agency for Instructional Television, with additional support from the Corporation for Public Broadcasting and Exxon Corporation.

Copies of the complete field test report are available for $5 from the Agency for Instructional Television, Box A, Bloomington, Indiana 47402.

BACKGROUND

The Series

ThinkAbout is a series of sixty 15-minute programs in the Skills Essential to Learning Television Project. The series is being developed by the Agency for Instructional Television in conjunction with a consortium of 37 state and provincial education agencies with additional support from the Corporation for Public Broadcasting and the Exxon Corporation. *ThinkAbout* will be ready for initial use in the 1979-80 school year.

Aimed at 5th and 6th graders, the series is designed to strengthen reasoning skills and review and reinforce language arts, mathematics, and study skills. *ThinkAbout*'s four major goals are to encourage and improve confident and flexible thinking, self-management, effective expression, and systematic reasoning.

ThinkAbout is divided into "clusters," or groups of programs. Clusters present general thinking skills -- classifying, giving and getting meaning, sequencing, using criteria among them -- skills that can be used when solving problems in school and out.

Interspersed between clusters are two other kinds of programs -- tips and challenges. Tips offer ideas to aid problem solving. Challenges are complex, thought-provoking problems intended to stimulate students' intellectual adrenaline. Each challenge provides an indication of how students are progressing toward the goal of independent learning. Overall, *ThinkAbout*'s sixty programs offer students opportunities to improve their reasoning, study, mathematics, and language arts skills and apply them repeatedly.

The Cluster

The focus of this impact evaluation was the Collecting Information cluster, consisting of three programs. With its post-viewing discussions, the cluster is an educational treatment of approximately one-and-one-half hours.

The field test was designed to look at the impact of the cluster on teachers and students with respect to the cluster outcomes specified by the *ThinkAbout* executive staff. (Those outcomes are illustrated below.) The evaluation reported here focuses on three areas of the cluster's potential impact:

1) the classroom processes associated with viewing the programs; 2) teacher attitudes about the programs and their designs for potential utilization; and 3) student understanding of the processes of collecting information and students' cognitive structure associated with these concepts.

I. Essential Cluster Outcomes

A. After each program:

After each program in the cluster, without benefit of a Teacher's Guide or specific encouragement, teachers will conduct at least a 15-minute discussion related to at least one of the following items:

1. Program 1:

Reasoning/Problem Solving
- a. determining information needs when solving a problem, pursuing an interest, etc.
- b. planning for an information collection activity (the value of or techniques for)

Related Skill
- c. using standard reference aids: classified ads

2. Program 2:

Reasoning/Problem Solving
- a. the value of and techniques for planning an information collection activity in terms of types of sources, locating sources, selecting an appropriate source

Related Skills
- b. locating print reference materials in a library or media center
- c. using standard reference aids: encyclopedia

3. Program 3:

Reasoning/Problem Solving
- a. ways to gather information

Related Skills
- b. collecting information to answer specific questions by conducting a survey
- c. interviewing resource persons to gain specific information
- d. reading and making a bar graph
- e. finding the arithmetic average

B. After the cluster:

After the entire cluster, students will demonstrate the achievement of the following:

1. Greater awareness that planning is more useful than not planning.
2. Greater awareness of consequences of not being planful. Students will be better able to predict consequences of not planning.
3. In simulated data collection problems, greater abilities to describe a wider range of sources and techniques for collecting information (the range of alternatives will increase).

Figure 1. Cluster Outcomes

II. Desirable Cluster Outcomes

A. After each program:

After each program in the cluster, teachers will provide activities wherein students:

1. Program 1:

Reasoning/ Problem Solving
a. determine information needs in a systematic way

Related Skill
b. use the parts of a newspaper, including the index and the classified ad section

2. Program 2:

Reasoning/ Problem Solving
a. identify, locate, select and use sources appropriate for his/her purpose

Related Skill
b. apply one or more of the related skills (listed under Essential Outcomes above for Program 2) in a problem-solving context

3. Program 3:

Reasoning/ Problem Solving
a. use various information gathering techniques (interviews, questionnaires, secondary source data bases, etc.)

Related Skill
b. apply one or more of the related skills (listed under Essential Outcomes for Program 3) in a problem-solving context

B. After the cluster:

After the entire cluster, students will engage in a performance activity to demonstrate being better able to determine systematically information needs related to the clarification or solution of a problem, selecting appropriate sources of this information, and collecting relevant pieces of information.

Criteria for the performance activity being met include:

1. More systematic process (list needs, sources, techniques, etc.)
2. Richer set of sources considered.
3. Wider variety of techniques for collection considered.
4. Selected sources and techniques justified more fully by students.
5. Valuing of systematic approach.

Figure 1. Cluster Outcomes (cont'd)

The Research

In the plan for *ThinkAbout*, the cluster, not individual programs, was proposed as the minimal unit for studying the impact or effects of the series. Those effects would be evident as the degree to which students and teachers achieved the cluster outcomes.

In response to the *ThinkAbout* consortium's need by the spring of 1979 for information relating to potential series impact, the evaluation staff undertook the field test reported here. The design and implementation of the field test were based on the assumption that the context in which the cluster was evaluated was representative of conditions of actual series use.

Field Test Conditions

The Collecting Information cluster was examined under three different conditions of teacher preparation for the *ThinkAbout* series. In the complete orientation condition, the teachers participated in a one-hour workshop, orienting them to the *ThinkAbout* series and to the cluster. These workshops tried out a format for a one-hour teachers' orientation workshop prepared by the AIT Communications Department. During the workshop teachers received complete Teachers' Guide materials for the cluster.

In the minimal orientation condition, participating teachers were given only a brief overview of *ThinkAbout* and only the information about the cluster necessary for participation in the field test. They received a one-page summary of the three cluster programs.

In the control condition, teachers attended the same workshop as the minimal orientation participants. Since their classes would watch programs from *bread & butterflies* instead of the Collecting Information cluster, these teachers received the *bread & butterflies* Teacher's Guide.

All classrooms viewed two *ThinkAbout* programs prior to baseline testing and the Collecting Information cluster. Those programs emphasized the systematic reasoning process, but did not deal extensively with collecting information. Those programs were provided as common stimulus materials to place all subjects at a common baseline level for testing effects of the cluster.

Types of Data Collected

To collect the data, substitute teachers in each school district were hired as classroom observers. Typically, each pair of observers was responsible for the data collection in four classrooms. Data were collected to explore three different areas of cluster impact -- classroom process (using observation systems), student outcomes (using written questionnaires and interviews), and teacher reactions (using written questionnaires).

Classroom Process

Classroom observations occurred both when the programs were shown and at other specified times throughout the field test period.

Observations When the Programs Were Shown. Each time a program was shown, observers working in pairs were present in the classroom. One observer recorded a narrative account of the pre-viewing and post-viewing lessons presented by the teacher. In addition, teacher and student behaviors during the program were documented. The second observer documented the follow-up lesson on a structured summary observation form. This form contained criteria for lessons related to both the essential and desirable teacher outcomes. The observer reported the nature of the lesson as it touched upon those criteria.

Observations When the Programs Were Not Shown. At specified times not associated with use of the programs, observers working alone documented lessons taught during the regular school day. The purpose of these observations was to determine the extent to which the *ThinkAbout* programs (or their content) were mentioned in the context of other lessons and to determine the extent of instruction relating to collecting information and reasoning and problem-solving skills in the context of other lessons.

Student Outcomes

Student outcome measures were administered at three times during the field test -- prior to the first cluster program, immediately following the last program, and an interview a day or two after the cluster was complete.

1. Pretest. Written pretests were given to one-third of the classes in both *ThinkAbout* and control conditions before the cluster programs were shown.

2. Posttest. Written posttests were administered after the cluster was complete. Classes which took the pretest received the same test forms in the posttest. In addition, another one-third of the classes received only the posttest to control for a training effect of the pretest.

3. Interview. On the school day after the cluster was completed an interview was administered to several students in each class. Again, students from an additional one-third of the classes in each teacher orientation condition participated in the interview to control for possible training effects of previous written questionnaires.

Teacher Questionnaires

Each teacher who used the *ThinkAbout* programs completed four teacher questionnaires. After each program in the Collecting Information cluster teachers indicated the range of lessons they perceived might have been taught in conjunction with the program. In addition, they rated the degree to which each of the program's objectives were effectively addressed. After

the entire cluster, teachers responded to a set of questions dealing with the cluster as a whole.

Table 1 summarizes the teacher preparation and measures given to students. Cell entries indicate the number of intact classes in each condition.

Table 1.

Distribution of Classes
Among Field Test Conditions

	Measures Given to Students			
Teacher Preparation	Pretest Posttest Interview	Posttest Interview	Interview	TOTAL
Complete Orientation	7	7	7	21
Minimal Orientation	6	6	7	19
Control	7	7	6	20
TOTAL	20	20	20	60

Sample

The Collecting Information cluster was field tested in 60 classrooms from November 29 through December 12, 1978. Participants were twenty 5th and 6th grade classes in each of three communities -- Kansas City, Missouri; Syracuse, New York; and Knoxville, Tennessee.

To obtain a sample of classes considered to be reasonably representative of potential *ThinkAbout* users, certain criteria were specified for participation. An analysis of the demographics of the sample revealed that:

- Of the 60 classes 32% were "regular TV users" (using instructional television once a week or more).
- Of the 60 classes 85% were rated either "average" in ability (on a 3-point scale from "below average" to "above average") or heterogeneously grouped.
- Of the 60 classes, 55% were departmentalized and 45% were self-contained.
- Minority group students comprised 29% of the sample.
- Half of the classes were 5th grade and half were 6th grade.

RESULTS*

Student Outcomes

Sources and Techniques of Collecting Information

Student measures asked for selection of collecting information alternatives to child-centered problems, for listings of a variety of sources of information, and for listings of a variety of techniques of collecting information.

- ✓ Students instructed by the Collecting Information cluster increased their knowledge of techniques for collecting information. Those techniques -- questionnaires, surveys, taking notes, making charts and graphs -- were specifically emphasized in the programs. The fifth and sixth graders were already familiar with many conventional sources of information.

Table 2 indicates the significant change in students who watched *ThinkAbout* programs.

Table 2

Number of Collecting
Information Techniques Named

	Pretest			Posttest			
	n	$\bar{x}$	sd.	n	$\bar{x}$	sd.	p
ThinkAbout	62	0	0	57	.19	.48	.002
Control	22	0	0	23	.09	.29	n.s.

n = number of students
$\bar{x}$ = average number of techniques named

* Some of the tables displayed below are abbreviated. For a full display of the data, see the complete field test report.

✓ Students instructed with the Collecting Information cluster were more likely to list thinking and planning activities as the first thing to do when beginning a collecting information task. The fifth and sixth graders were already aware of the value of planning, and they could project the consequences of not planning in familiar situations.

Table 3 indicates the significant change in students who watched *ThinkAbout* programs.

Table 3

Acceptable Responses for How
to Begin A Collecting Information Task

	Pretest			Posttest			
	n	$\bar{x}$	sd.	n	$\bar{x}$	sd.	P
ThinkAbout	62	.53	.56	56	.79	.65	.03
Control	20	.90	.55	21	.76	.70	n.s.

n = number of students
$\bar{x}$ = average number of acceptable responses;
1.0 is maximum possible $\bar{x}$.

Cognitive Structure

Concern about the ways students mentally orga. ze new information or integrate new information with knowledge they already possess has given rise to a theoretical concept called "cognitive structure." "Cognitive structure" refers to the internal organization of information and experience. Because instruction is expected to have an effect on cognitive structure, ways of assessing change in cognitive structure were explored.

Two questionnaires were developed to obtain similarity/dissimilarity judgments for one set of task-oriented items and a second set of process-oriented items. In the first set, the actions were conceptual -- figure out, think of, decide, find out, etc. In the second, the actions were more concrete -- read, write, make, measure, etc. In the first set, the objects of the action were abstract and non-specific -- kinds of information, things you know, where to get information, etc. In the second, the objects were specific -- questionnaires, survey, chart, book, etc.

Table 4

Items on Cognitive Structure Forms

Form C	Form D
A. think of all the things you know about the topic	A. make a list
B. write down all the things you need to do	B. measure something
C. list all kinds of information you could use	C. take notes
D. choose the ways to collect the information	D. read a book
E. ask yourself what you need to know	E. interview someone
F. find out what sources you might use	F. read the newspaper
G. decide where to get the information	G. make a graph
H. figure out which information is easiest to collect	H. read a chart
I. decide which information is most useful	I. give out questionnaires
	J. take a survey

The cognitive structure data were analyzed using multidimensional scaling techniques. Three-dimensional solutions best represented the Form D data. The results from Form C are inconclusive. Further research is necessary to make specific statements about the cognitive structures of the children with respect to the abstract process-oriented statements.

- ✓ Changes in "cognitive structure" for concrete activities (Form D) associated with collecting information occurred over time when relevant *ThinkAbout* instruction was provided. Prior to instruction, the representation of "cognitive structure" was loosely organized. After instruction, new clusters of similar activities occurred and distinctions between different activities were sharpened.

Compare the areas circled on Figures 2 and 3 to note changes in the organization of specific item groups.

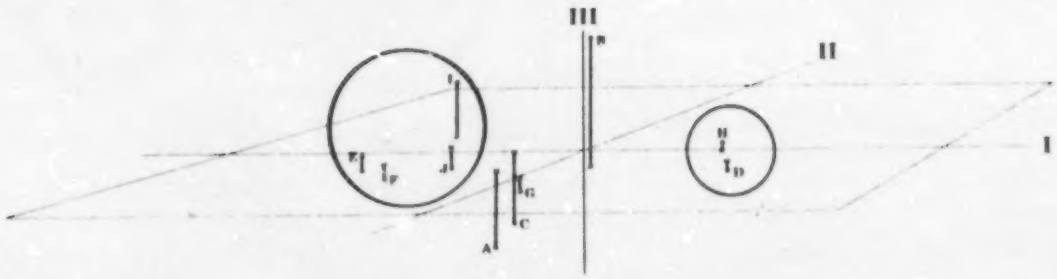

Figure 2. *ThinkAbout* pretest cognitive structure representation for *ThinkAbout* and control groups combined.+

+ Letters correspond to items in Table 4. Solid lines indicate a point positioned above the plane on the two-dimensional surface. Broken lines indicate the point's position below the surface.

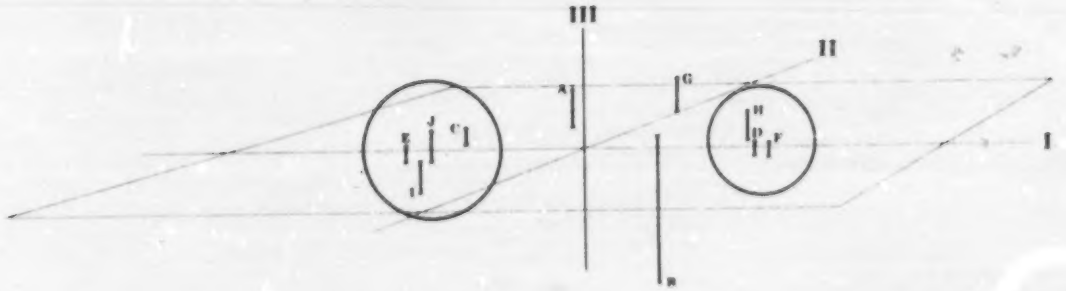

Figure 3. *ThinkAbout* pre-post posttest cognitive structure representation.

One cluster of items which converged on the posttest included the following:

E. interview someone
I. give out questionnaires
J. take a survey
C. take notes

On the pretest, the Item E, I, and J relationships were clearly further apart and Item C was not associated with the cluster at all. On the pretest, Items E and F were almost identical; interviewing was seen as related to reading the newspapers. Children may have been perceiving interviews as what news reporters do, whether on television news programs or in newspapers. After watching the Collecting Information cluster and experiencing related classroom activities, students perceived the two items quite differently. Reading the newspaper was closely clustered with other sources of information which must be read (Items D and H). Interviewing someone, on the other hand, converged with the other items listed above. On the pretest, taking notes (Item C) was more closely associated with items requiring writing (making a list and making a graph). Afterwards, the posttest configuration showed it to belong with data collection techniques which were illustrated in the program.

A second cluster formed on the *ThinkAbout* posttest configuration deals with information gathering by reading. Items D, F, and H involve reading a book, the newspaper, and a chart, respectively. Viewing the programs focused the students' awareness on the similarity of these activities. Of particular interest from the standpoint of structuring cognitive process is that Item H is positioned very close to Items D and F on Dimension 1 (reading versus "non-reading"). However, because of the slightly quantitative character of Dimension 2, Item H is pulled slightly apart from the other two items on that dimension. In fact, reading a chart frequently does involve a more quantitative type of reading than does reading from books and newspapers.

One relationship becomes much more distinctive. On the pretest, measure something (Item B) and make a graph (Item G) are fairly close but on the posttest the distinction between the two becomes particularly clear on the quantitative dimension.

In summary the results indicated changes in cognitive structure over time within one group of students who watched *ThinkAbout* programs (the pre-post group). Prior to relevant instruction, *ThinkAbout* students exhibited a loosely organized cognitive structure. After instruction, two types of changes were evident in children who saw *ThinkAbout* programs. The representation of post-instruction cognitive structure involved new clusters of related activities. Similar activities converged into very close proximity, suggesting the formation of sub-categories. Second, some items were perceived as more different on the posttest than they had been on the pretest. Sharpened distinctions occurred between items thought previously to be rather similar. While the *ThinkAbout* cognitive structure representation

became more distinct, the control group representation changed little over the course of the field test. Irrelevant instruction did not change the cognitive structure for collecting information activities.

Other Findings

- ✓ Fifth and sixth graders generally were not able to communicate well about collecting information as an abstract or hypothetical process. This result was consistent across different forms of instrumentation -- Form C of cognitive structure, abstract story problems and interview questions.

- ✓ No apparent differences were found related to classroom organization patterns (departmentalized or self-contained) and to teacher orientation conditions.

Classroom Process

Criteria for a Successful Program

The *ThinkAbout* executive staff was concerned that each program be compelling enough to assure three aspects of classroom follow-up. These aspects constituted criteria for acceptability. First, teachers should provide a 15-minute post-viewing lesson in conjunction with the program. Second, the lesson should have a focus of either (a) review-and-comprehension of program content or (b) application of program content. The focus of the lesson should be related to the essential and desirable outcomes. The executive staff determined that a review-and-comprehension lesson would be an outcome essential for acceptable use of the cluster, while an application lesson would be desirable. Third, at least one collecting information objective or related skill should be treated in each lesson. Recognizing the educator's need to utilize television materials in a manner consistent with individual classroom needs, the criteria for acceptable use allow considerable latitude and flexibility to follow-up.

- ✓ The acceptability criteria for program follow-up lessons were adequately met. The requisite 15-minute follow-up lesson was closely approximated for all three programs; the average length of lesson was 12 to 14 minutes (Table 5). The requirement that follow-up include review and discussion of program events was met by 96% of the lessons (Table 6). The requirement that at least one specified objective or related skill be the focus of the follow-up was met by 84% of the lessons (Table 7).

Table 5

Length of Follow-up in Minutes for
Collecting Information Cluster Lessons

Program	Number of Classes	Range	Mean	% Lessons 15 minutes and longer
1	33	0-33	11.6	39.4
2	28	1-40	14.3	46.4
3	35	1-43	13.6	45.0
Cluster Average	32	0-43	13.2	43.6

Table 6

Number and Percentage of *ThinkAbout* Teachers
Providing Follow-up Lessons by Focus of Lesson

	Review-and-Comprehension*	Application as a Secondary Focus	Application	Total Number Responses
All *ThinkAbout* Teachers				
Program 1	33 (94.3)	11 (31.4)	11 (31.4)	35
2	37 (100.0)	28 (75.7)	7 (18.9)	37
3	30 (93.8)	16 (50.0)	8 (25.0)	32

* The review-and-comprehension lesson was considered an essential outcome for acceptability of each program.

Table 7

Frequencies and Percentages of Follow-up Lessons Involving at Least One Objective or Related Skill

Program	No. Classes Reported	No. (%) Involving Objective/Related Skill
1	39	33 (85.6)
2	36	31 (86.1)
3	34	27 (79.4)
Cluster Average	36.3	30.3 (83.5)

Qualitative Assessment

Based solely on narrative materials, broad subjective categories of lesson quality were constructed by an independent analyst. Criteria for assigning a lesson to a category incorporated the treatment of program outcomes, the use of questions and activities suggested by the teacher's guides, the length and quality of discussion, and the comprehensiveness of program review.

✓ Teachers with the complete teacher's guide tended to present more "good" follow-up lessons and fewer "inadequate" lessons; teachers with a limited teacher's guide presented comparatively fewer "good" lessons and more "inadequate" ones.

Table 8

Percentage of *ThinkAbout* Lessons Judged for Quality by Teacher Orientation and Type of Classroom

	Lesson Quality		
	"Good"	"Adequate"	"Inadequate"
Teacher Orientation			
Complete (n=47)	59.6	27.7	12.8
Minimal (n=52)	30.8	40.4	28.8
Type of Classroom			
Departmentalized (n=62)	46.8	30.6	22.6
Self-Contained (n=37)	40.5	40.5	18.9
TOTAL Sample	44.4	34.3	21.2

N=99

Observations of Regular Classroom Activity
When Programs Were Not Being Shown

To assess the potential degree of "overflow" of *ThinkAbout* programs into regular classroom activities, observations were conducted at specified times throughout the school day. Tables 9, 10, and 11 indicate the nature of that "overflow." Discussion of *ThinkAbout* programs and/or *ThinkAbout*-related topics were observed in many classes (Table 9). The relative frequency of discussions of *ThinkAbout* programs varied with specific curriculum areas (Table 10). The various aspects of program content used in lessons are illustrated in Table 11.

✓ *ThinkAbout*-related topic discussions, e.g., problem-solving, study skills and collecting information, occur in many classrooms as part of the on-going classroom process. Some discussion specific to *ThinkAbout* programs occurred during regular classroom lessons.

Table 9

Relevant Discussion Topics Observed in
All Context Observations (n=667)

Topic	Percentage *
General Topics	
Strategies for collecting information	24.3
General problem-solving skills	48.7
Personal study skills	30.4
Specific Television Series	
ThinkAbout	7.9
Bread & Butterflies	1.2

n=667

* Percentages total 112.5%. Discussion topics observed total 751 in 667 observations.

✓ The relative frequency of teachers' discussion of *ThinkAbout* programs seems to be related to the curriculum area of the lesson.

Table 10

Discussion of *ThinkAbout* Programs by Curriculum Area for *ThinkAbout* Classes Only

Curriculum Area	*ThinkAbout* Programs n (%)
Language Arts	12 (22.6)
Reading	6 (11.3)
Math	13 (24.5)
Social Studies	9 (16.9)
Science	5 (9.4)
Other	8 (15.1)
TOTAL	53

n = number of lessons observed in which *ThinkAbout* programs were mentioned.

✓ The mnemonic is the most accessible part of the program for spontaneous application in a variety of subject areas during regular classroom activities.

Table 11

Program Content Used in Seventy-Four Classroom Lessons

Content	No. of Observations (% of Lessons)
Mnemonic	48 (64.9)
Storyline	9 (12.2)
Educational Message (general)	31 (41.9)
Message - Collecting Information	32 (43.2)
Message - Information Needs	18 (24.3)
Message - Sources of Information	16 (21.6)
Other	10 (13.5)

Teacher Reactions

Teacher reactions to the Collecting Information cluster were collected on a program-by-program basis on written questionnaires. Teachers indicated their perceptions of the main teaching points of each program (Table 12), as well as the related skills on which they might have based a follow-up lesson (Tables 13, 14, 15). These teacher reactions were not a requirement of the cluster outcomes, but they were collected as additional evidence regarding potential impact of the cluster.

✓ Teacher perceptions of the main teaching points for the individual programs and for the cluster as a unit were generally accurate with respect to the original design. Although the three programs deal with similar concepts, the emphasis in each is different. In describing the "main thing" each program might help them teach, teachers indicated appropriate distinctions among the programs.

Table 12

Teacher Perceptions of the Main Teaching Point
for the Three Collecting Information Cluster Programs

Main Teaching Point	% of respondents
"What Do I Know?" [a]	
The importance of planning when collecting information, stressing a systematic, step-wise approach to problem solving	69
"Where Do I Go?" [b]	
Availability and use of information sources/ resource materials	88
"What Should I Do?" [b]	
Guidelines for collecting information	41
Value of effective planning	28
Methods used for reporting data and making predictions	16

[a] n = 35

[b] n = 32

✓ The related skills designated for each program were consistently identified as possible bases for follow-up lessons, in contrast to those skills which were not emphasized.

Table 13

Related Skills[a] Recognized by Teachers Which Might Have Been Used as Basis for Follow-up Lesson for "What Do I Know?"

	Related Skill	% of Teachers
Δ	Describing factually what was viewed or observed	82.1
	Locating resource persons who can provide required information	74.4
*	Using standard reference aids	69.2
	Interviewing resource persons who can provide required information	56.4
	Collecting information to answer specific questions by conducting a survey	56.4
	Locating reference materials in a library or media center	53.8
	Recognizing the criteria for authoritative sources	48.7
	Using the parts of a book to preview a book or to locate information	46.2
Δ	Measuring	28.2
	Performing computations where money is involved	12.8
	Rounding numbers to the appropriate place based on the problem situation	10.3
	Reading and making a bar graph	7.7
	Finding the arithmetic average	2.6
	None of the above	2.6

N=39

Note: Average number of skills recognized = 5.5

[a] See Design Report 6 for listing of related skills.

Δ Bonus: Related skill not included in original program design but "claimed" by *ThinkAbout* executive staff.

* Intended: The related skill included in original program design.

Table 14

Related Skills[a] Recognized by Teachers Which Might Have Been Used as Basis for Follow-up Lesson for "Where Do I Go?"

	Related Skill	% of Teachers
*	Locating reference materials in a library or media center	97.2
*	Using standard reference aids	94.4
Δ	Locating resource persons who can provide required information	91.7
Δ	Interviewing resource persons who can provide required information	86.1
Δ	Describing factually what was viewed or observed	86.1
	Collecting information to answer specific questions by conducting a survey	63.9
Δ	Recognizing the criteria for authoritative sources	61.1
Δ	Performing computations where money is involved	61.1
Δ	Using the parts of a book to preview a book or to locate information	50.0
Δ	Rounding numbers to the appropriate place based on the problem	36.1
	Measuring	8.3
	Finding the arithmetic average	5.6
	Reading and making a bar graph	2.8
	None of the above	0

N=36

Note: Average number of skills recognized = 7.4.

[a] See Design Report 6 for listing of related skills.

* Intended: Related skill included in original program design.

Δ Bonus: Related skill not included in original program design but "claimed" by *ThinkAbout* executive staff.

Table 15

Related Skills[a] Recognized by Teachers Which Might Have Been Used as Basis for Follow-up Lesson for "What Should I Do?"

Related Skill	% of Teachers
* Collecting information to answer specific questions by conducting a survey	86.1
Δ Locating resource persons who can provide required information	83.3
* Interviewing resource persons who can provide required information	75.0
Recognizing the criteria for authoritative sources	61.1
* Finding the arithmetic average	58.3
* Reading and making a bar graph	58.3
Describing factually what was viewed or observed	41.7
Using standard reference aids	36.1
Locating reference materials in a library or media center	33.3
Performing computations where money is involved	33.3
Rounding numbers to the appropriate place based on the problem situation	19.4
Using the parts of a book to preview a book or to locate information	8.3
Measuring	5.6
None of the above	0

N=36

Note: Average number of skills recognized = 6.0.

[a] See Design Report 6 for listing of related skills.

* Intended: Related skill included in original program design.

Δ Bonus: Related skill not included in original program design but "claimed" by ThinkAbout executive staff.

The *ThinkAbout* design calls for the series to be applicable to the range of curriculum areas in fifth and sixth grades.

✓ Teachers indicated that potential lessons taught in conjunction with the programs would cut across curriculum areas and include a wide range of activities.

Table 16

Curriculum Areas to Which the Collecting Information Cluster Perceived by Teachers to be Most Applicable

Curriculum Areas	% of Teachers
Language Arts	81.6
Social Studies	73.7
Science	55.3
Math	34.2
Other	18.4

N=38

In order for teachers to use the series as it was designed teachers must perceive the programs to be effective in meeting the stated objectives.

✓ Teachers' ratings of program effectiveness in addressing the student outcomes were high for all three programs and for the cluster.

Table 17

Rating by Teachers of Cluster's Effectiveness of Addressing Desirable Student Outcomes

Objective	Median Effectiveness Rating[a]
Awareness that planning is more useful than not planning	1.4
Consideration of a wide variety of sources for information gathering	1.7
The value of a systematic approach to collecting information	1.8
Awareness of the consequences of not planning	2.8

N=38

[a]Five-point scale used for rating (1=very effective, 5=very ineffective)

- ✓ Overall teacher response to each of the three programs and to the cluster as a unit was generally very positive. For the most part they perceived the stories to be appealing and relevant to the interests of fifth and sixth graders. In addition, the content was seen to be comprehensible by those students. Teachers found the cluster teachable, indicating that the programs lent themselves naturally to follow-up.

Conclusions and Implications

Data from observations indicate that classroom utilization of the cluster met the expectations for use expressed in the field test design. Teachers and students discussed appropriate topics related to the Collecting Information cluster, and they engaged in relevant activities. In addition, the immediate post-viewing discussions lasted for the requisite amount of time. The presence of related print materials seemed to positively affect post-viewing lesson quality.

A variety of student data indicates that the programs increased student ability to list information collecting techniques, but that fifth and sixth graders already possess a knowledge of information sources. Use of the Collecting Information cluster had a focusing and organizing effect on student cognitive structure relating to specific techniques for collecting information. Students did not seem to have the ability to communicate and organize abstract concepts related to the processes of collecting information.

Teacher questionnaires indicate that each program communicated its particular focus and objectives and that teachers saw a range of activities associated with program utilization.

Because the Collecting Information cluster makes up only five percent of the entire series, generalizations from this study to the impact of *ThinkAbout* must be made with caution. However, despite the limited nature of the treatment (only one-and-one-half hours of instruction during the field test) results are encouraging.